Alpine Entomology 7 2023, 195–200 | DOI 10.3897/alpento.7.111490

PENSOFT

Alpine Entomology

Anchonidium selvanum sp. nov. (Coleoptera, Curculionidae, Molytinae) from northern Portugal

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https://zoobank.org/D92E8495-535C-4E18-82BC-DE08526128D7

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Academic editor: Yannick Chittaro ♦ **Received** 22 August 2023 ♦ **Accepted** 11 October 2023 ♦ **Published** 24 October 2023

Abstract

The fourth species of *Anchonidium* sensu stricto from Western Europe is described, photographed and compared with its congeners; an updated key of the genus is given. The habitat in the northern mountain chains in Portugal in the native *Quercus* mountain forests is characterized and illustrated.

Key Words

Molytinae, Typoderini, morphology, taxonomy, ancient forest, *Quercus* forest

Introduction

The genus *Anchonidium* Bedel, 1884 comprises at present five species. Three of them in Western Europe (*A. unguiculare* (Aubé, 1850), *A. braunerti* Germann, 2020 and *A. spathiferum* Germann, 2020) belonging to *Anchonidium* sensu stricto. Furthermore, two morphologically deviating species from the Caucasus region (*A. caucasicum* (Motschulsky, 1845), *A. perpensum* Faust, 1886) recently re-defined by Hlaváč (2020) are clearly belonging to another genus within the Tribe Typoderini, and they were therefore termed preliminarily as *Anchonidium* sensu lato by Germann (2020). *Anchonidium* had also been used as a wastebasket to harbor superficially similar species from Africa. Grebennikov (2018) started clarifying descriptions by Hoffmann (1965, 1968) and Hlaváč and Borovec (2022) erected the genus *Oberprielerius* Hlaváč & Borovec, 2022 (Cyclominae) to accommodate the former *Anchonidium uniforme* Voss, 1974 from South Africa.

We here focus on a new species of *Anchonidium* s. str. from northern Portugal, morphologically most closely related to *Anchonidium spathiferum* Germann, 2020 from Serra do Estrela. Germann (2020) already assumed that four specimens from Serra do Marão might belong to a new species. A collecting excursion into the northern mountain chains in Portugal finally allowed to study the variability of the new species, and helped understanding of the distribution patterns of *A. unguiculare* and *A. selvanum* sp. nov.

Material and methods

We provide the description of the new species in a condensed form. For details, we refer to the exhaustive redescription of the genus sensu stricto by Germann (2020). Main emphasis is set on the illustrating photos taken with a Keyence VHX-6000 photosystem at the Naturhistorisches Museum Basel (NMB). Photos of the genitalia were taken from objects embedded in glycerol. Body length was measured dorsally from the anterior margin of the pronotum to the apex of elytra.

For the collection methodology of specimens, all details are given in Germann (2020). Label data for all specimens are printed. All type specimens are labelled with red printed name labels. Locality data for the map was taken from Germann (2020).

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Acronyms are as follows: **NHML** Natural History Museum London; **NMB** Naturhistorisches Museum Basel; **NMBE** Naturhistorisches Museum Bern, Switzerland; **NMPC** National History Museum Prague, Czech Republic; **SDEI** Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany; **cCB** collection Carlo Braunert, Mensdorf, Luxembourg; **cCG** collection Christoph Germann, Rubigen, Switzerland; **cLB** collection Lutz Behne, Müncheberg, Germany.

Description

***Anchonidium selvanum* sp. nov.**

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Material. ***Holotype*** ♂ 413_23.2 Portugal, Vila Real, Sra do Alvão, Bilhó, Bobal, 41°23'56"N, 7°49'48"W, 880m, *Quercus cerris*, *Q. pyrenaica*, *Erica umbellata*, 31.5.2023, leg. C. Germann (NMB).

***Paratypes*:** 1 ♀ Portugal, Vila Real, Serra do Marão, 750 m, 21.05.1997, leg. W. Starke (cLB). – 1 ♂, 1 ♀ Portugal, Vila Real, Serra do Marão, 750 m, June 1997, leg. Th. Aßmann (cLB). – 1 ♂ Portugal, Vila Real, Serra do Marão, 750 m, 10.06.1997 (SDEI). – 27 ♂, 9 ♀ 413_23.2 PORTUGAL, Vila Real, Sra do Alvão, Bilhó, Bobal, 41°23'56"N, 7°49'48"W, 880 m, *Quercus cerris*, *Q. pyrenaica*, *Erica arborea*, 31.5.2023, leg. C. Germann (cCG, NHML, NMB, NMBE, NMPC). – 33 ex. dito, leg. C. Braunert (cCB). – 15 ♂, 6 ♀ 413_23.3 Portugal, Vila Real, Sra do Alvão, Bilhó, Bobal, 41°23'54"N, 7°49'42"W, 941 m, 31.5.2023, leg. C. Germann (cCG, NMB). – 6 ex. dito, leg. C. Braunert (cCB). – 9 ♂, 3 ♀ 413_23.4 Portugal, Vila Real, Sra do Alvão, 2km NW Lamas de Olo, 41°22'56"N, 7°49'01"W, 1056 m, 31.5.2023, leg. C. Germann (cCG). – 9 ♂, 9 ♀ dito, leg. C. Braunert (cCB). – 1 ♂, 1 ♀ 413_23.10 Portugal, Porto, Sra do Marão, 5 km E Ansiães, 41°14'55"N, 7°53'44"W, 1330 m, 2.6.2023, leg. C. Germann (cCG). – 1 ex. 413_23.11 Portugal, Porto, Sra do Marão, 5km NE Ansiães, 41°16'10"N, 7°54'21"W, 1180 m, GS [sifted] *Quercus*, 2.6.2023, leg. C. Braunert (cCB).

Diagnosis. (Figs 1–3, 7–14) Body length (without rostrum): 2.1–3.3 mm. Body colour auburn. Pronotum: Anterior margin of prosternum lacking rostral notch or channel. Metacoxae separated from mesocoxae by distance slightly superior to diameter of metacoxae; length of metaventrite as long as diameter of mesocoxae; first ventrite inbetween metacoxae coarsely punctuate with especially large, roundish-oval punctures, but not confluent to form deep grooves as in *A. unguiculare*. Elytra L/W: 1.5–1.6, elongate, parallel sided, widest shortly behind middle. Striae coarsely and regularly punctuate, counting 15–17 punctures from elytral base to declivity.

***Male genitalia*:** Penis tube-like, in dorso-ventral view laterally diverging just before apex, almost rectangular, apical margin weakly rounded (Figs 7, 8); in lateral view bowed (Fig. 9).

***Female genitalia*:** Sternite 8 with plate drop-shaped, apodeme shorter than plate, apex thickened and laterally strongly protruding (Fig. 10). Spermatheca c-shaped with tip of cornu pointed, base roundish, ramus and nodulus not protruding (Fig. 11). Sclerotized bursal atrium in dorso-ventral view ear-shaped, in lateral view with protruding basal appendix (Figs 12–14).

Derivation of name. *Anchonidium selvanum* sp. nov. is named after the native oak-forest in Portugal, characterised below, the name is taken from the Portuguese "la selva" which means the primeval forest. Unfortunately, this native habitat is severely threatened by the intensive wood logging, the reforestation with *Eucalyptus* and *Mimosa* trees from Australia or *Pinus halepensis* Mill. which all grow fast and the short time yield per square meter tempts the forest owners to plant them (Garcia et al. 2008; Queirós 2012). Finally, the natural forest habitats are severely threatened by wildfires, often lighted on purpose and tolerated or even enhanced by the fire-tolerant invading tree species.

Ecology. We found most numerous specimens per locality in remains of the native oak forests – 69 at the type locality in two sifting samples, and 57 at localities just nearby where the forest had been cut supposedly years before – (Figs 15, 16). This typical forest is similar to a subtropical cloud forest and is composed of the two indigenous species *Quercus pyrenaica* Willd. and *Q. cerris* L. with *Erica umbellata* L. and a wide variety of mosses, lichens and fern species on the tree's branches, growing on granite stone. The deep and humid leaf litter is a good indicator for individual rich occurrences of *Anchonidium selvanum* sp. nov.

Adapted key from Germann (2020) on *Anchonidium* sensu stricto in Western Europe

2A Ventral side of pronotum at anterior margin with faint and shallow rostral notch or channel. First ventrite with oval groove between metacoxae; elytra laterally rounded, shorter, 1.4–1.5 times as long as wide; 10 to 13 punctures on elytral disc from base to declivity; widest in first third; aedeagus thin (lateral view), slender and flattened with almost rectangular apex and rounded sides; apex dorsally with well visible setae. Sclerotized bursal atrium helmet-like with bubble on top. Great Britain (Cornwall), W- and NW-France, N-, NW- and S-Spain, N-Portugal, N-Morocco (Fig. 4) ..... *A. unguiculare* (Aubé, 1850)

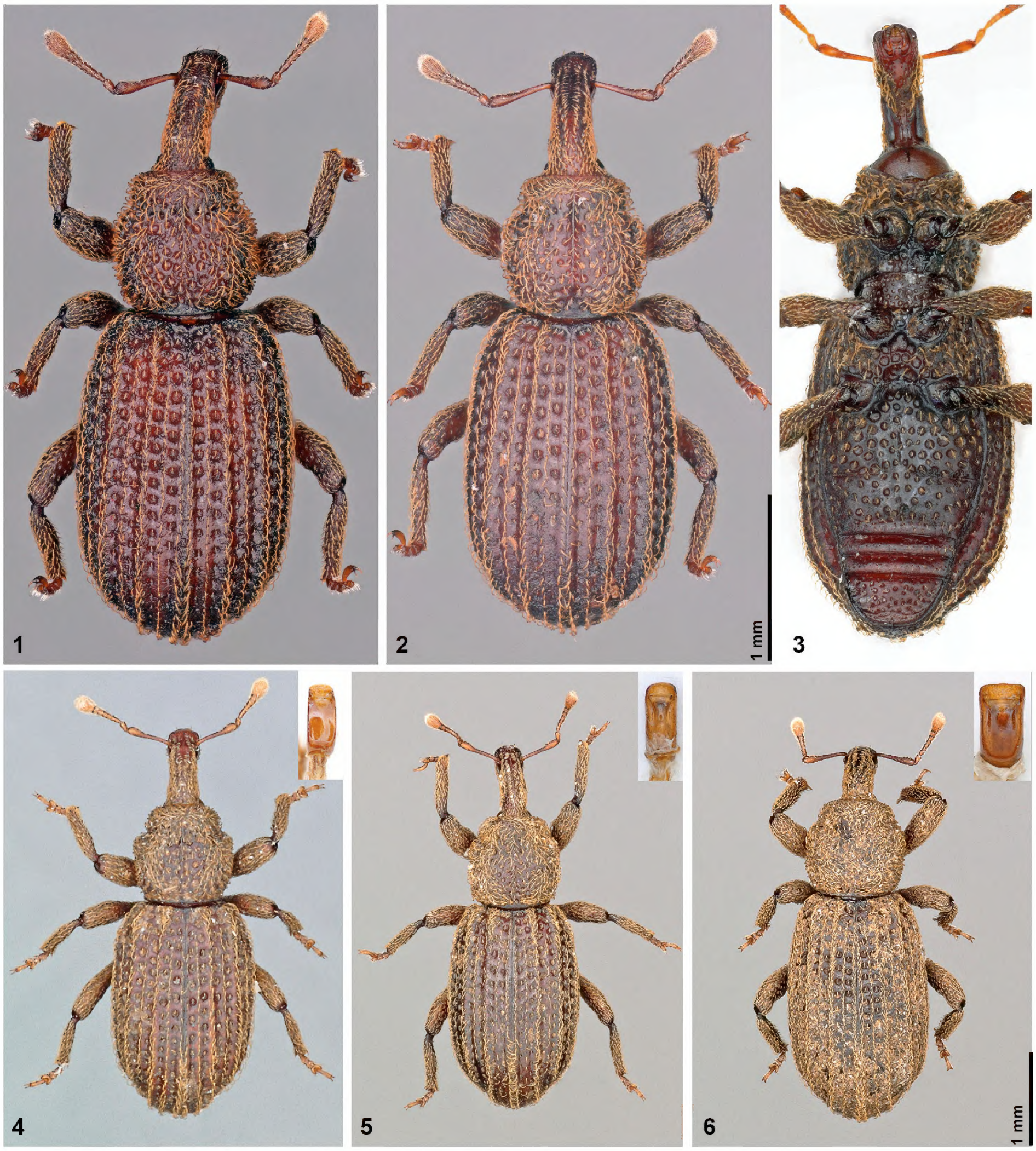
2B Ventral side of pronotum at anterior margin only sinuate, no rostral notch or channel detectable. First ventrite without groove, but with very coarse oval punctures between metacoxae; elytra parallel sided, longer, 1.5–1.8 times as long as wide; 14 to 17 punctures on elytral disc from base to declivity; widest in or behind middle; aedeagus shorter, tube shaped, blunt and thick in lateral view; apex without well visible setae 3

3A Elytra widest in middle, 1.6–1.8 times as long as wide; Aedeagus parallel sided, apex in dorsal view evenly rounded. Portugal (Serra de Monchique) (Fig. 5) ..... *A. braunerti* Germann, 2020

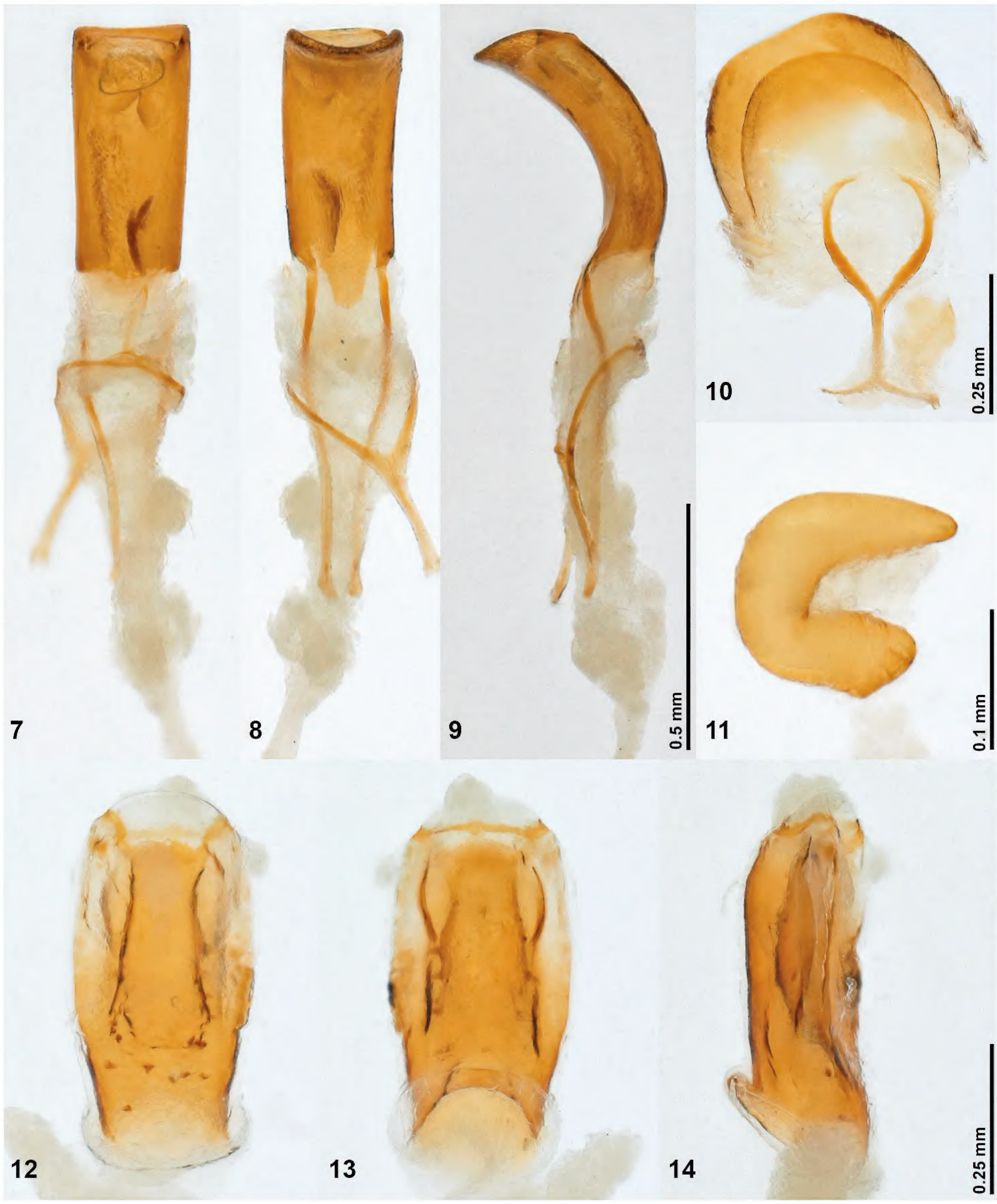
3B Elytra widest behind middle, 1.5–1.6 times as long as wide. Aedeagus slightly expanded to apex, apex in dorsal view straight 4

4A Body robust. Apex of aedeagus very broad, spatula-shaped with sinuate apical margin. Bursal atrium sclerotized, frog shaped. Portugal (Serra da Estrela) (Fig. 6) ..... *A. spathiferum* Germann, 2020

4B Body slender. Apex of aedeagus narrower, apex weakly rounded, not sinuate (Figs 7, 8). Bursal atrium sclerotized, ear shaped (Figs 12, 13). Portugal (Serra do Marão, Serra do Alvão) (Figs 1–3, 7–14) ..... *A. selvanum* sp. nov.



Figures 1–6. 1–3. *Anchonidium selvanum* sp. nov. **1.** Male; **2.** Female; **3.** Male underside; **4–6.** Habitus and penis (medianlobus, dorsal view) of **4.** *Anchonidium unguiculare* (Spain, Alto Campoo). **5.** *A. braunerti* (Portugal, Serra de Monchique). **6.** *A. spathiferum* (Serra da Estrela). Photos: C. Germann).



Figures 7–14. 7–9. Aedeagus of *Anchonidium selvanum* sp. nov, holotype. **7.** Dorsal view; **8.** Ventral view; **9.** Lateral view; **10–14.** Female genitalia of a paratype; **10.** Tergites 8 and 7 and Sternite 8; **11.** Spermatheca; **12.** Sclerotized bursal atrium; **12, 13.** Dorso-ventral views; **14** Lateral view (Photos: C. Germann).

Discussion

The distribution of the four *Anchonidium* s. str. species in Portugal follows the mountain chains and river valleys (Fig. 17). *Anchonidium braunerti* in the most southern Serra de Monchique on 890 m a.s.l. with the Rio Tajo as the northern barrier. *A. spathiferum* in the Serra da Estrela on 1290 m a.s.l. with the Douro valley in between the hereby described *A. selvanum* sp. nov. in both, the Serra do Marão and Serra do Alvão on 750–1180 m a.s.l. The specific excursions into the most northern Serras revealed that *A. unguiculare* is not only distributed in the

Figure 15. Habitat at type locality of *A. selvanum* sp. nov. at Bobal, 880 m a.s.l., Serra do Alvão. A small remaining part of the ancient Oak forest with mosses, lichens and a deep leaf litter layer at ground where the new species lives in remarkable densities (Photo: C. Braunert).

Figure 16. Remains and replantation of Oak forest in the Serra do Marão close to Ansiães. A good example for small remains of the ancient forests where we found only few individuals of *A. selvanum* sp. nov. (Photo: C. Braunert).

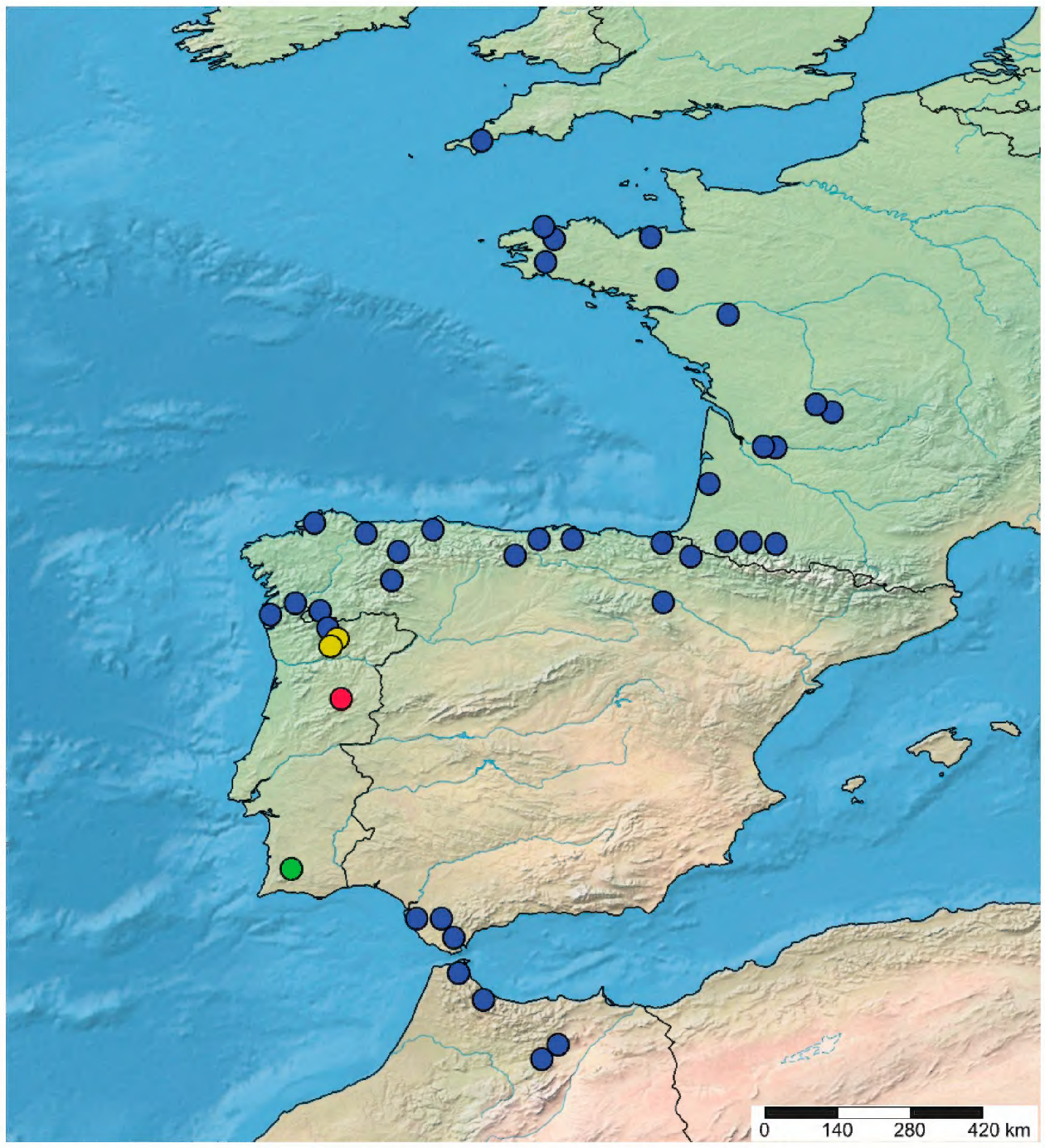


Figure 17. Records from *Anchonidium* sensu stricto in Western Europe. *A. unguiculare* (blue dots), *A. braunerti* (green dot), *A. spathiferum* (red dot) and *A. selvanum* sp. nov. (yellow dots). Background map by https://www.simplemappr.net/.

Serras Peneda and Gerez, but reaches also the Serra do Barroso (two sampled localities: 10 km NE Cabeceiras de Basto, 41°35'26"N, 7°56'12"W, and 11 km NE Cabeceiras de Basto, 41°35'45"N, 7°56'26"W), and even crosses the Rio Tâmega valley. In the northernmost edge of the Serra do Alvão, we collected *A. unguiculare* from scrubland at the following locality: 1 km northeast of Macieira, 41°25'53"N, 7°48'34"W, 970 m a.s.l. just four kilometers north of the type locality of the new species. Hence, we did not directly observe a sympatric occurrence, but it is likely.

Due to the constant loss of its characteristic habitat, *Anchonidium selvanum* sp. nov. must be considered as

threatened. The relict character of those forests and the new species is of special importance, and we need to address this observation here. These ancient oak forests are tiny relicts of a habitat type, which had a much wider distribution in ancient times; surely these forests covered a considerable part of those mountain chains. Nevertheless, due to exceptionally redundant wildfires in Portugal (Nunes and Duarte 2006), and a severe loss of natural habitats due to overexploitation followed by plantations of the above-mentioned Australian trees, which even enhance the chance of severe wildfires, this habitat type strongly declined. Even in the Parque Natural do Alvão, we found only small remains of this ancient forest type. *Anchonidium selvanum* sp. nov. has to be considered as an excellent indicator for these ancient woodlands. We observed spectacular differences in individual numbers collected, when comparing disturbed habitats with more intact ones.

The observed ecological demands of the *Anchonidium* s. str. species investigated differ to a certain extent. We collected all species under humid and shaded conditions. *A. unguiculare* accepts larger varieties of forests, from mediterranean Oak forests in the south of Spain and in Morocco, to the oceanic influenced deciduous forests along the Atlantic coast of Spain, France and Great Britain. *A. braunerti* seems to be restricted to the highest elevations of Serra de Monchique in a habitat type where heather and mosses dominate nowadays. We collected *A. spathiferum* in a very similar habitat, where, however, the absence of an ancient Oak forest might explain the rareness of specimens found. Here, with the discovery of *A. selvanum* sp. nov. it is obvious that this new species is restricted to the ancient Oak forests, and as we could show with specifically prospected localities, the more northern situated mountain chains are populated by *A. unguiculare*. The latter species also occurred in much larger numbers in more ancient forests, rather comparable with *A. selvanum* sp. nov.

Acknowledgements

Many thanks to all our friends joining the successful Portugal excursion, Michael Balkenohl (Bonstetten), Ruedi Bryner (Biel) and Salome Steiner (Bern). Many thanks to Mandy Schröter (SDEI Müncheberg) for the prolonged loan of specimens from Serra do Marão; those specimens initiated the present excursion.

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